BULLETIN
ZOÖLOGISCH MUSEUM

UNIVERSITEIT VAN AMSTERDAM

Vol. 13 No. 5 1991

REEXAMINATION OF THE HOLOTYPE OF *PSEUDERYTHRINUS ROSAPINNIS* HOEDEMAN, 1950, A SYNONYM OF *HOPLERYTHRINUS UNITAENIATUS* AGASSIZ, 1829 (PISCES, CHARACIFORMES, ERYTHRINIDAE)

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ABSTRACT

The holotype and only known specimen of *Pseuderythrinus rosapinnis* Hoedeman, 1950 from Surinam is reexamined for the dentition of its palatal arch. Its morphometric and meristic data are compared with four species of erythrinids from the Guianas. *Pseuderythrinus rosapinnis* turns out to be a synonym of *Hoplerythrinus unitaeniatus.*

INTRODUCTION

Until 1950 the family Erythrinidae (often considered a subfamily of Characidae, the Erythrininae) consisted of three genera. In that year Hoedeman (1950) described a new genus and species, *Pseuderythrinus rosapinnis,* based upon one specimen from "a ditch near Paramaribo" (Surinam). According to Hoedeman "some important characters were evident enough to separate it from the genera hitherto known in this group, viz. *Erythrinus, Hoplerythrinus* and *Hoplias".* He placed *Pseuderythrinus* between the genera *Erythrinus* and *Hoplerythrinus.* From the latter, "...most closely related..." genus, it was said to differ in scale counts, nasal bone position, distribution of the sensory canals and pores and, most important, in the number and distribution of teeth on the palatal arch.

Hoedeman recorded a narrow elongate band of teeth on the palatines and absence of teeth on the pterygoids in *Pseuderythrinus.* He stated that *Hoplerythrinus* has a broad patch of teeth on the palatines and no teeth on the pterygoids. Weitzman (1964) made a detailed osteological study of the Lebiasininae and Erythrininae and found a wide range in the numbers of teeth on the palatal arch of *Hoplerythrinus.* Based upon a cleared and stained specimen and other non-stained specimens of *Hoplerythrinus,* he found teeth on the ectopterygoids, absence of teeth on the palatines, and a patch of teeth on the mesopterygoid which may be few or numerous, usually fewer in small specimens. Therefore, it seemed likely to Weitzman that "...the specimen, 128 mm in standard length, forming the basis of Hoedeman's new genus, has yet failed to develop a dense aggregation of mesopterygoid teeth and it seems likely that this genus is a synonym of *Hoplerythrinus.* The color and other characters of *Pseuderythrinus rosapinnis* are very much like those of *Hoplerythrinus unitaeniatus;* further investigations probably would indicate that, at most, *P. rosapinnis* is a subspecies of *H. unitaeniatus.* The type of *Pseuderythrinus rosapinnis* needs reexamina-

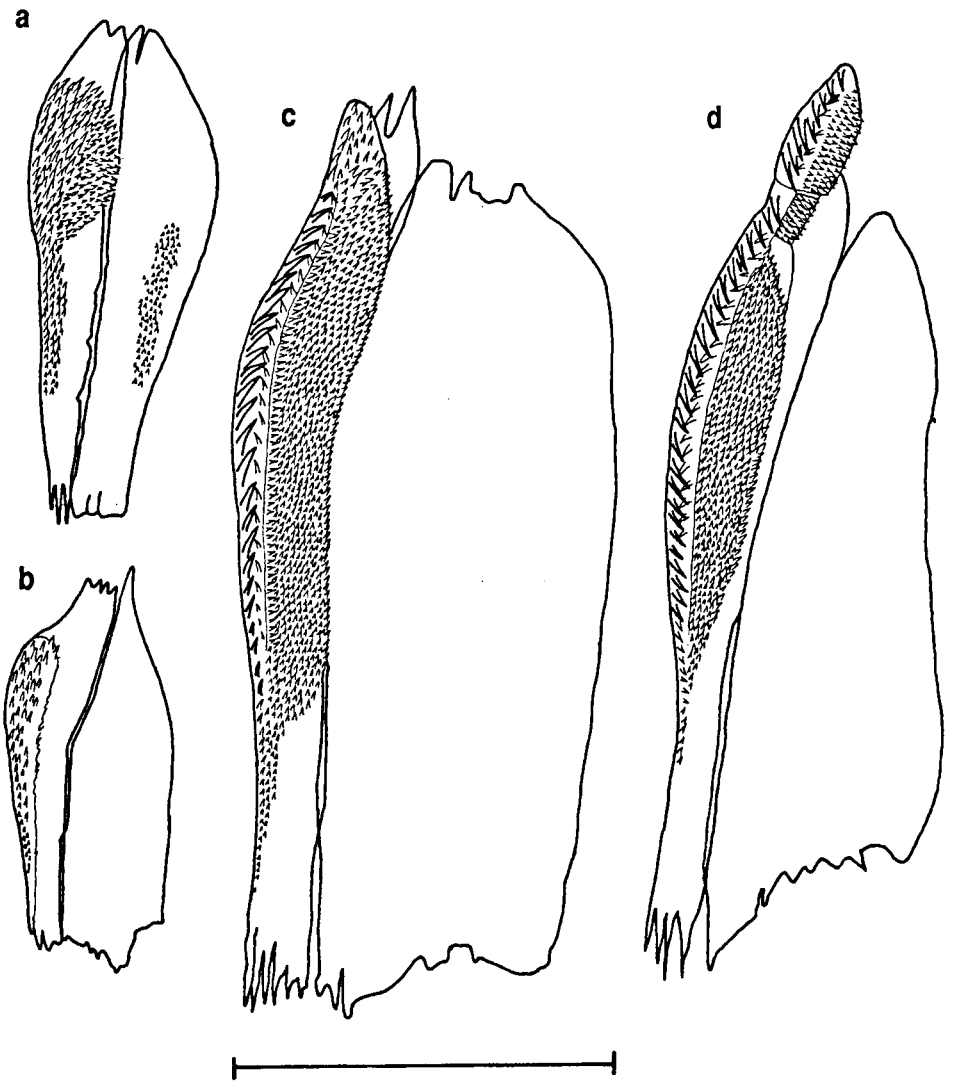

Figure 1. Ventral view of right ectopterygoid (left part of each figure) and mesopterygoid (right part of each figure) showing the distribution of teeth of: a) *Hoplerythrinus unitaeniatus*, SL 117 mm; b) *Erythrinus erythrinus*, SL 116 mm; c) *Hoplias macrophthalmus*, SL 139 mm; d) *Hoplias malabaricus*, SL 141 mm. Scale bar represents 0.5 mm.

tion".

For the reexamination of the holotype of *Pseuderythrinus rosapinnis* morphometric and meristic data and counts were taken from the erythrinids occurring in the Guianas, as revised by Eigenmann (1912): *Hoplerythrinus unitaeniatus, Erythrinus erythrinus, Hoplias macrophthalmus* and *Hoplias malabaricus.* Additional trypsin-cleared and alizarin-stained specimens of these four species - one specimen of each - were made to examine the teeth on the palatal arch to compare them with *P. rosapinnis.*

METHODS

All measurements and counts were taken according to the definitions of Hubbs & Lagler (1947). The trypsin-cleared and alizarin-stained specimens were prepared according to the method of Taylor (1976).

EXAMINED MATERIAL

Pseuderythrinus rosapinnis Hoedeman, 1950
Surinam: Suriname River System: holotype (ZMA 104.279)

Hoplerythrinus unitaeniatus Agassiz, 1829
Surinam: Marowijne River System: 1 specimen (ZMA 106.178)
Suriname River System: 4 specimens (ZMA 105.009 / 105.127 / 105.145 / 105.309)
Corantijn River System: 2 specimens (ZMA 108.345)
French Guyana: Approuague River System: 1 specimen (ZMA 111.252)
Oyapock River System: 3 specimens (ZMA 107.684 / 107.725)
Brazil: Rio Amazonas: 1 specimen (INPA)
Rio Madeira System: 4 specimens (INPA)
Trypsin-alizarin specimen from Surinam, Suriname River System (ZMA 105.309)

Table I

Fin ray and scale counts of the erythrinids from the Guianas and Brazil

	Pseuderythrinus rosapinnis HOLOTYPE	*Hoplerythrinus unitaeniatus* (N=16)	*Erythrinus erythrinus* (N=11)	*Hoplias macrophthalmus* (N=11)	*Hoplias malabaricus* (N=11)
D	ii,8	ii,9	ii,9	ii,12 / ii,13	ii,11 / ii,12
A	ii,9	ii,8	ii,8	ii,8	ii,8
P1	i,13	i,13 / i,15	i,12 / i,14	i,12 / i,14	i,12 / i,13
P2	i,7	i,7	i,7	i,7	i,7
C	i,15,i	i,14,i / i,15,i	i,15,i	i,15,i / i,16,i	i,15,i
Sc LL	33	32 / 33	31 / 32	36 / 42	36 / 39
Sc d LL	4	4	4	7	6
Sc v LL	4	4	4	5	5
Sc PreD	(14?)*	13 / 14	15 / 16	17 / 19	16
Sc CP	(16?)**	16	16	19 / 20	19 / 20

D = Dorsal fin rays
A = Anal fin rays
P1 = Pectoral fin rays
P2 = Pelvic fin rays
C = Caudal fin rays
Sc LL = Scales along the lateral line
Sc d LL = Scales dorsal of lateral line
Sc v LL = Scales ventral of lateral line
Sc PreD = Scales predorsal
Sc CP = Scales circumferencial of caudal peduncle

* 14 according to Hoedeman (1950)
** 16 according to.Hoedeman (1950)

Erythrinus erythrinus Bloch & Schneider, 1801
Surinam: Marowijne River System: 4 specimens (ZMA 104.279 / 106.323 / 106.626)
Suriname River System: 6 specimens (ZMA 105.431 / 105.512 / 105.552 / 105.6789 / 105.693 / 106.616)
Guiana: Essequibo River System: 1 specimen (ZMA 100.311)
Trypsin-alizarin specimen from Surinam, Marowijne River System (ZMA 106.623)

Hoplias macrophthalmus Pellegrin, 1907
Surinam: Marowijne River System: 2 specimens (ZMA 105.968)
Suriname River System: 8 specimens (ZMA 105.267 / 105.414 / 105.426 /105.714 / 107.582)
Brazil: Oyapock River System: 1 specimen (ZMA 107.683)
Trypsin-alizarin specimen from Surinam, Marowijne River System (ZMA 105.968)

Hoplias malabaricus Bloch, 1794
Surinam: Suriname River System: 10 specimens (ZMA 105.101 / 105.014 / 105.152 / 105.305 / 105.314 / 112.529)
French Guyana: Approuage River System: 1 specimen (ZMA 107.713)
Trypsin-alizarin specimen from Surinam, Suriname River System (ZMA 105.152)

RESULTS

In table 1 the fin ray- and scale counts are given. *Pseuderythrinus rosapinnis* shows the same counts as *Hoplerythrinus unitaeniatus* except for dorsal and anal fins. Although the counts fall outside the range of my series, according to Hoedeman the number of dorsal and anal fin rays of *P. rosapinnis* falls within the range of *H. unitaeniatus*. The predorsal scales and the scales around the caudal peduncle could not be counted because Hoedeman removed the right side of the holotype to examine its gas bladder.

In table 2 the ratios of the morphometric data are given. Nearly all the ratios of *P. rosapinnis* fall within the range of *H. unitaeniatus*. Only the lengths of the fins are different. The pectoral, pelvic, dorsal and caudal fins of *P. rosapinnis* are significantly smaller than those of *H. unitaeniatus*. This could be due to the fact that Hoedeman's specimen lived in an aquarium for almost one year.

The character that induced doubt about the status

Table 2

Morphometric and meristic characters of the erythrinids from the Guianas and Brazil.

	Pseuderytrinus rosapinnis	*Hoplerythrinus unitaeniatus*		(N=16)	*Erythrinus erythrinus*		(N=11)	*Hoplias macrophthalmus*		(N=11)	*Hoplias malabaricus*		(N=11)
	HOLOTYPE	MEAN	RANGE	ST. DEV.	MEAN	RANGE	ST. DEV.	MEAN	RANGE	ST. DEV.	MEAN	RANGE	ST. DEV.
SL (mm)	118		58 - 241			55 - 129			65 - 263			59 - 214	
SL/HL	3.5	3.3	3.1 - 3.6	0.13	3.6	3.3 - 4.0	0.18	3.1	2.9 - 3.2	0.10	3.2	2.9 - 3.3	0.12
SL/BD	4.5	4.1	3.7 - 4.5	0.21	4.4	3.9 - 5.2	0.35	4.4	4.0 - 5.5	0.44	4.5	3.6 - 4.8	0.36
SL/DCP	6.7	7.0	6.1 - 8.1	0.45	6.2	5.6 - 7.1	0.38	7.0	6.7 - 7.5	0.32	7.4	7.1 - 7.9	0.24
SL/OP1	3.6	3.5	3.1 - 3.8	0.17	3.6	3.3 - 3.9	0.20	3.1	3.0 - 3.3	0.11	3.2	3.0 - 3.4	0.13
SL/OP2	1.9	1.8	1.7 -1.9	0.04	1.7	1.6 - 1.8	0.05	1.8	1.7 - 1.9	0.05	1.8	1.7 - 2.0	0.06
SL/OD	1.8	1.8	1.8 - 2.0	0.06	1.8	1.7 - 1.9	0.05	2.0	2.0 - 2.1	0.04	2.0	1.9 - 2.1	0.07
SL/OA	1.3	1.3	1.2 - 1.3	0.03	1.3	1.2 - 1.3	0.03	1.2	1.2 - 1.3	0.02	1.2	1.1 - 1.3	0.04
SL/LP1	8.8	6.1	5.8 - 6.7	0.25	6.2	5.6 - 6.9	0.37	5.3	4.6 - 6.2	0.53	6.2	5.8 - 6.7	0.24
SL/LP2	9.7	6.3	5.8 - 6.9	0.33	5.7	4.4 - 6.7	0.64	5.1	4.5 - 5.6	0.40	5.5	5.1 - 5.9	0.24
SL/LD	7.0	5.8	5.0 - 6.5	0.38	4.9	3.5 - 5.9	0.79	4.9	4.0 - 5.6	0.46	5.6	5.2 - 6.0	0.27
SL/LA	7.7	6.6	5.7 - 7.7	0.64	6.7	5.5 - 7.8	0.73	5.9	3.7 - 6.9	0.86	6.7	3.9 - 7.8	1.10
SL/LC	5.3	4.2	3.8 - 5.1	0.39	4.2	3.8 - 4.9	0.32	3.5	2.8 - 4.2	0.40	3.5	3.1 - 3.9	0.28
HL/SNL	4.3	3.9	3.5 - 4.2	0.16	3.7	3.4 - 3.9	0.16	4.5	4.1 - 4.7	0.21	3.9	3.1 - 4.3	0.34
HL/UJL	2.1	2.1	1.9 - 2.2	0.09	2.2	2.0 - 2.4	0.10	2.0	1.9 - 2.2	0.09	1.9	1.8 - 2.2	0.11
HL/ORL	4.7	4.7	3.3 - 6.3	0.77	4.5	4.0 - 5.0	0.34	3.7	3.0 - 4.6	0.57	4.8	4.0 - 5.6	0.52
HL/IOW	2.8	2.7	2.4 - 3.2	0.16	2.6	2.4 - 2.9	0.16	5.9	3.9 - 7.1	1.02	3.8	3.3 - 4.6	0.36
HL/HW	?	1.6	1.5 - 1.8	0.12	1.5	1.4 - 1.7	0.09	1.9	1.8 - 2.2	0.13	1.9	1.6 - 2.4	0.19

SL = Standard length
HL = Head length
BD = Body depth
DCP = Depth caudal peduncle
OP1 = Origin of pectoral fin
OP2 = Origin of pelvic fin
OD = Origin of dorsal fin
OA = Origin of anal fin
LP1 = Length of pectoral fin
LP2 = Length of pelvic fin
LD = Length of dorsal fin
LA = Length of anal fin ray
LC = Length of caudal fin
SNL = Snout length
UJL = Upper jaw length
ORL = orbital length
IOW = Interorbital width
HW = Head width

of *P. rosapinnis* to Weitzman (1964), is the number and distribution pattern of the teeth on the palatal arch. Hoedeman stated that *H. unitaeniatus* had "pterygoids" with teeth and that a narrow patch of villiform teeth was present on the palatines. Hoedeman's "pterygoid" is the mesopterygoid and his palatine is the ectopterygoid. (Weitzman interpreted Hoedeman's "pterygoid" to be the ectopterygoid.) In figure 1 the ectopterygoid and mesopterygoid of the examined erythrinids are illustrated. *H. unitaeniatus* has a broad patch of teeth on the ectopterygoid and a narrow band of teeth on the mesopterygoid. Weitzman records a variable number of teeth on the mesopterygoid. There may be few in juveniles and more in larger specimens. My cleared and stained specimen of *H. unitaeniatus,* which has the same standard length as the holotype of *P. rosapinnis,* shows a small patch of mesopterygoid teeth. The small patch of teeth on the mesopterygoid could not be detected but may be covered by the still present layer of epithel of the mouth roof. The holotype of *P. rosapinnis* could not be cleared and stained, however the distribution pattern of ectopterygoid teeth on the remaining left side of the specimen is just like that of *H. unitaeniatus.*

DISCUSSION

The colour of the alcohol preserved *P. rosapinnis* is reddish brown with a slightly darker back. Along the lateral line is a distinctive black band. There are two stripes on the suborbitals and a black spot on the operculum. This agrees with the colour pattern of *H. unitaeniatus.*

The remaining characters mentioned by Hoedeman, the distribution of the sensory canals and pores and the position of the nasal bone are not as "strikingly different" as Hoedeman indicated. He published drawings of the position of the sensory canals and pores of *P. rosapinnis* and *H. unitaeniatus.* According to the drawings there is a difference in position of canals and number of pores. Reexamination of the holotype of *P. rosapinnis* showed that the canals are hardly visible and the pores are well detectable although they are not all located on the positions that Hoedeman described. The cleared and stained specimen of *H. unitaeniatus* examined for the present study shows a labyrinth of sensory canals and pores of different sizes. The position of the pores of *H. unitaeniatus* is very similar to those of *P. rosapinnis.* The description of this character by Hoedeman appears to be erroneous.

The position of the nasal bone is the only discriminating character not yet discussed. According to Hoedeman the nasal of *H. unitaeniatus* is in contact with the orbit. This is true concerning the most dorsoposterior part. The remaining posterior edge of the nasal is separated from the orbit by the prefrontal (Gregory, 1933). Unfortunately, the delimitation of the nasal in the holotype of *P. rosapinnis* is not clearly visible, because it is covered by skin, and probably was erroneously represented in Hoedeman's drawing.

This reexamination of the holotype of *Pseuderythrinus rosapinnis* indicates that there is no evidence for maintaining a separate genus and species. Hence, *Pseuderythrinus rosapinnis* is a synonym of *Hoplerythrinus unitaeniatus.*

ACKNOWLEDGEMENTS

I am grateful to Dr Han Nijssen and Dr Isaäc J. H. Isbrücker (ZMA, Amsterdam) for their help and support during this project. Dr S. H. Weitzman (NMNH, Washington D.C.) is thanked for his comments on the manuscript. I thank Dr Lucía H. Rapp Py-Daniel (INPA, Manaus) for the loan of erythrinid specimens from Brazil.

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Received: 14 August 1991.
Distributed: 12 September 1991.